


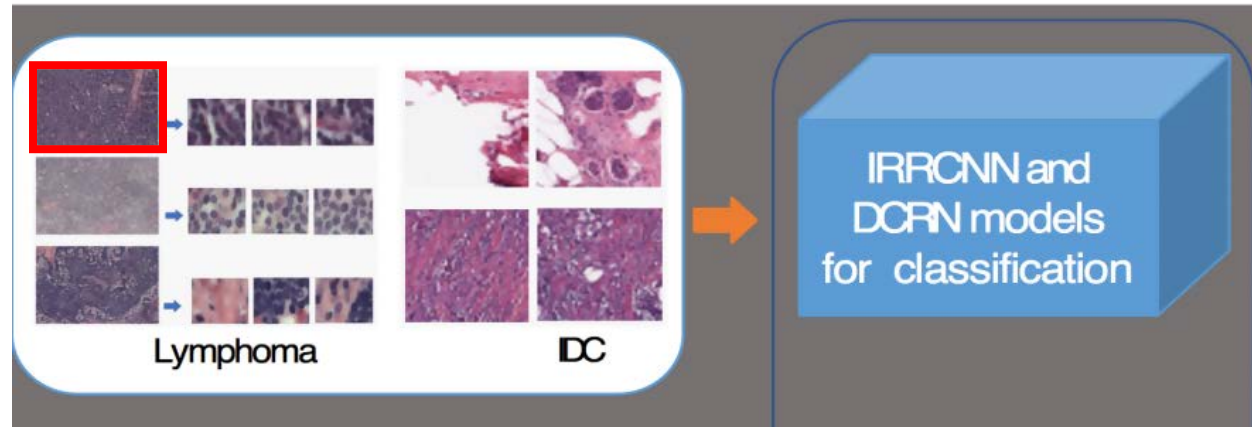
# **EXHIBIT D**

**Infringement of Claim 1 of U.S. Patent Number 7,088,854 by Deep Lens**

CLAIM LANGUAGE	Infringing Application
<p>1. A computer program product for generating special-purpose image analysis algorithms comprising:</p> <p>a computer usable medium having computer readable program code embodied therein, said computer readable program code configured to:</p>	<p>Advanced Deep Convolutional Neural Network Approaches for Digital Pathology  <u>Image Analysis</u>: a comprehensive evaluation with different use cases  <small>Md Zahangir Alom, Theus Aspiras, Tarek M. Taha, Vijayan K. Asari, Dave Billiter, and TJ Bowen</small></p>  <p>Source: DPA Poster: “Advanced Deep Convolutional Neural Network Approaches for Digital Pathology Image Analysis: a comprehensive evaluation with different use cases.” Deep lens image processing software (“Infringing Product”) is a computer program product for generating image analysis.</p>

obtain at least one image having a plurality of chromatic data points;

## IMPLEMENTATION DIAGRAM



Source: DPA Poster: “Advanced Deep Convolutional Neural Network Approaches for Digital Pathology Image Analysis: a comprehensive evaluation with different use cases.”

The Infringing Product takes an image.

## IMPROVED DEEP CNN (DCNN) MODELS

- We have proposed and evaluated improved DCNN models that provide better performance in CP with a minimal amount of memory and computational requirements.
- IRRCNN and DCRN models are applied for different classification tasks.
- R2U-Net model is used for Nuclei, Epithelium, and Tubule Segmentation.
- A new R2U-Net based regression model named “UD-Net” for Lymphocyte detection.

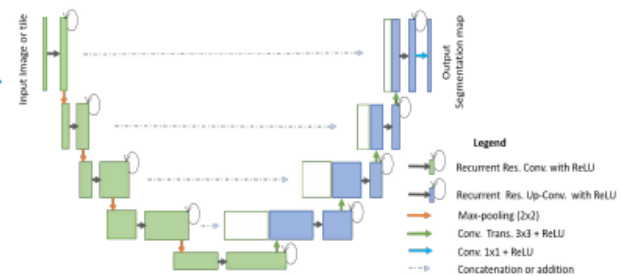


Figure 1. R2U-Net models with encoding and decoding units.

Source: PDF

generate an evolving algorithm that partitions said plurality of chromatic data points within said at least one image into at least one entity identified in accordance with a user's judgment; and

### Artificial Intelligence

Deep Lens is creating proprietary technology in computer vision across multiple cancer types to assist in visual analysis (i.e., AI and Deep Learning). AI has been available in other medical imaging spaces such as radiology for 20+ years because the complexity of diagnosis is much less varied than it is with pathology.

Dealing in multiple levels of magnification, multiple colors, multiple dimensional planes and requiring hundreds of visual cues that indicate disease or lack of disease is taxing on a person or a machine and requires significant horsepower.

Therefore the algorithms and compute power required to interpret them is much more intensive for pathology.

Our AI team, using the next generation of convolutional neural networks (CNNs) is adding features to our proven pathologist-developed workflow solution across dozens of cancer types and will make cell counting, IHC quantification (Ki67, PD-1, etc.), mitotic index counts, TIL counts and many more critical (but tedious) tasks instantaneous allowing the pathologist to focus on the nuanced work that they are trained to do and avoid error prone and time consuming work fit for a machine.

<https://www.deeplens.ai/ai-for-digital-pathology>

The Infringing Product generates an algorithm based on user manual annotation of objects of interest thereby training the algorithm.

<p>store a first instance of said evolving algorithm as a product algorithm wherein said product algorithm enables the automatic classification of instances of said at least one entity within at least one second image in accordance with said judgment of said user.</p>	<p>Deep Lens VIPER</p> <p>We have also been training our system to <u>help pathologists by classifying and identifying difficult tumors</u> with accuracy at levels much higher than any of our peers in machine vision oncology. These methods will be integrated to Deep Lens VIPER in early 2019 and are set to transform pathology, oncology and drug development - the entire cancer industry, as together we search for a cure.</p> <p><a href="https://www.deeplens.ai/ai-for-digital-pathology">https://www.deeplens.ai/ai-for-digital-pathology</a></p> <p>The Infringing Product stores the evolving algorithm and runs the stored algorithm on all the data to automatically classify additional images.</p>
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